

YEAR 3/4	CYCLE A	BLOCK 5
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	Aims, Attainment Targets and Guidance	Suggested teaching sequence
Phase 1	DTA3: Building bridges / CA5: e-mail	
	<ul style="list-style-type: none"> use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design evaluate their ideas and products against their own design criteria and consider the views of others to improve their work apply their understanding of how to strengthen, stiffen and reinforce more complex structures 	<p>Complete unit 3.5 e-mail</p> <p>Explain many inventors start by investigating through science and the pupils will experiment in the same way</p> <p>Explore ways in which pillars and beams are used to span gaps → explore trusses used to strengthen bridges → investigate how arches strengthen bridges → understand how suspension bridges are able to span long distances → design a prototype bridge to cross a chosen river → design a bridge for the wildlife pond</p>
Phase 2	DTA 3b: Boats afloat / SCA3: Forces	
	<ul style="list-style-type: none"> select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Observe closely, using simple equipment. Perform simple tests. Use observations and ideas to suggest answers to questions. identify the effects of air resistance, water resistance and friction, that act between moving surfaces 	<p>Investigate floating and sinking of boats → investigate how large metal boats float → Investigate different boat hull shapes and find out which is the most efficient for moving through water → Design and build a boat, with a power source, to carry a small load.</p> <p>Identify and explain the effects of water resistance → identify and explain the effects of air resistance → identify the effects of friction acting between moving surfaces</p>
Phase 3	SCA4: Magnets	
	<ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing 	<p>Compare how things move on different surfaces → explore how magnetic forces work → identify magnetic materials → investigate uses for magnets → Know about poles of magnets: attract and repel</p>
Phase 4	SCA5: Electricity	
	<ul style="list-style-type: none"> identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors. 	<p>Learn how electricity is generated → Identify common appliances that run on electricity → Construct simple series circuits → Investigate circuits: complete and incomplete → investigate and experiment with switches → Investigate conductors and insulators → research Thomas Edison and his discoveries</p>

Phase 5 & 6	DTA4: Fairground electronics / CA6: Coding	
	<ul style="list-style-type: none"> • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 	<p>look at a range of familiar products that use rotating parts → investigate ways of using electrical motors to create rotating parts → investigate ways of making a framework for a fairground ride → design a fairground ride with a rotating part → make a fairground ride following a design → evaluate a finished product.</p> <p>Complete unit 3.1 computing</p>